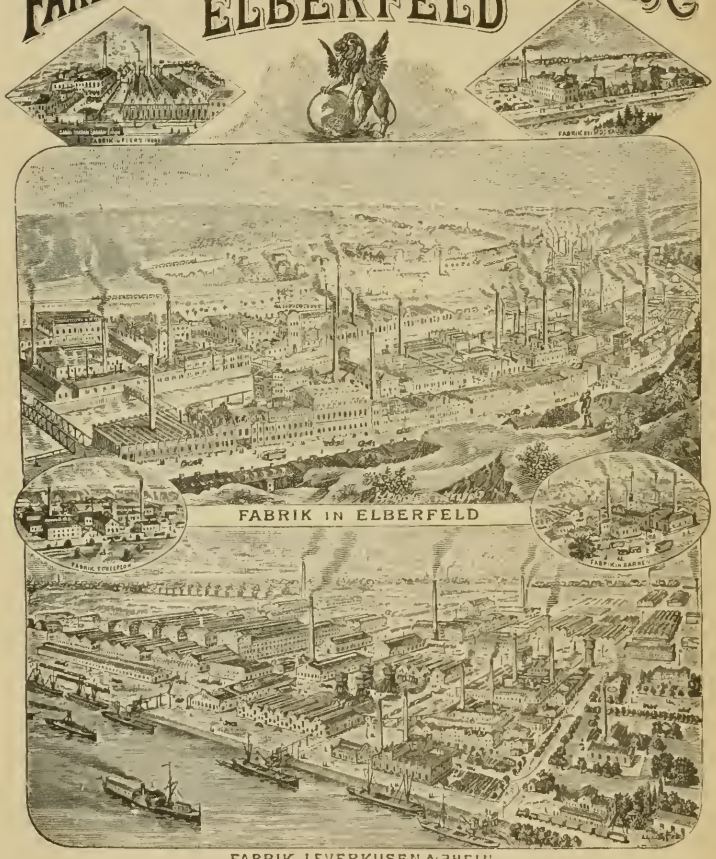
Farbenfabriken

vorm. Friedr. Bayer & Co.

Elberfeld

Garment Dyeing.

FARBENFABRIKEN VORM. FRIEDR. BAYER & Co
ELBERFELD



FABRIK IN ELBERFELD

FABRIK LEVERKUSEN A/RHEIN.

GARMENT DYEING

FARBENFABRIKEN

VORM.

FRIEDR. BAYER & Co.,

ELBERFELD.

No. 1262. 1906.

Preface.

In this new pattern book we give a detailed description of the dyeing of gentlemen's suits, ladies' dress and all other kinds of garments.

As we have mentioned in each paragraph only such colours as from experience are well adapted for the dyeing of the particular class of goods, with the best methods for dyeing same, we hope that in presenting this book to our esteemed circle of friends it will be found useful and serviceable as occasion arises.

Elberfeld, September 1906.

Farbenfabriken
vorm.
Friedr. Bayer & Co.

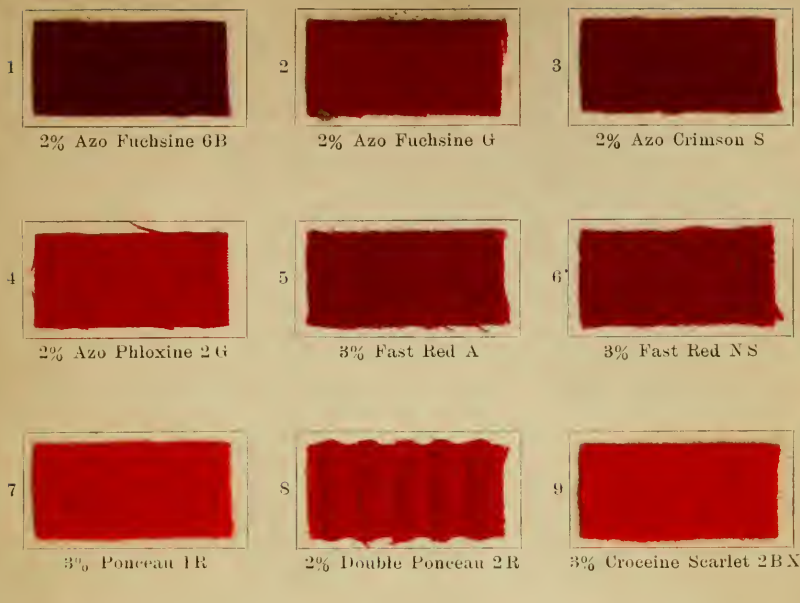
Index.

I. The Dyeing of Wool.

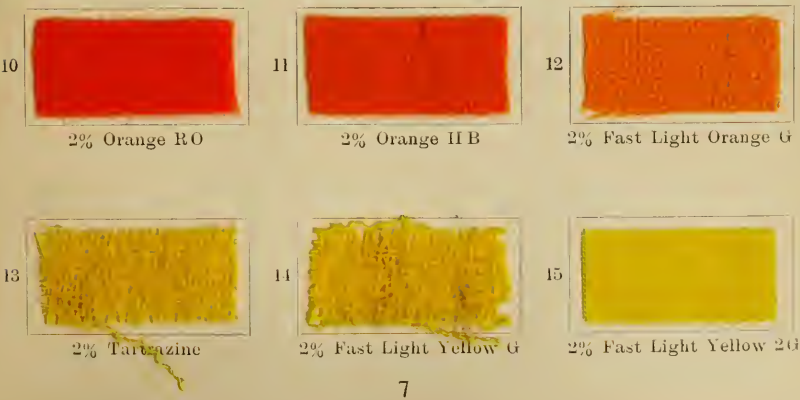
The Dyeing of Wool with Acid Colours.

Dye as a rule with the addition of 10—15 % Glauber's salt crystals and 2—5 % sulphuric acid. (Should any other method of dyeing be necessary this will be mentioned in each particular case.)

Acid wool colours are chiefly employed for the dyeing of ladies' dresses, upholstery cloth, curtains, table covers, etc., and in some cases also for the dyeing of gentlemen's suits, as a number of these colours are very fast to light and wear well.



Azo Fuchsine G and 6B, Azo Crimson S and Azo Phloxine 2G are well known for their property of dyeing very easily level and good penetration; their fastness to light is also very good, so that they can be employed as shading colours for the dyeing of gentlemen's suits. The other reds dye easily level only in deep shades and are used for the dyeing of scarlets and bordeaux shades on ladies' dress material, etc.



16 2% Chinoline Yellow

17 2% Naphtole Yellow S

For Orange shades Orange 2B and RO are most generally employed; the RO brand is redder in shade, covers very well and when dyed in combinations does not alter its shade so much in artificial light as the 2B brand. Fast Light Orange G, the Fast Light Yellows and Tartrazine are distunguished for their very good fastness to light and are much employed for the dyeing of gentlemen's suits.

Chinoline Yellow and the Fast Light Yellows are useful colours for shading purposes for light fancy shades, Tartrazine being more generally employed for brown shades. Naphtole Yellow S is employed for cheap yellows.

18 2% Alkali Fast Green G

19 2% Alkali Fast Green 3G

20 2% Brilliant Acid Green 6B

21 2% Fast Light Green

22 2% Fast Green, blue shade

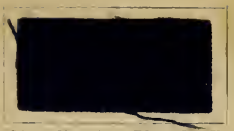
23 2% Wool Green BS

24 3% New Patent Blue GA

Amongst the green dyestuffs Brilliant Acid Green 6B is remarkable for its very good fastness to washing; most of the greens dye easily level. Fast Light Green and Wool Green BS are the fastest to light, the other greens meeting all ordinary requirements. New Patent Blue GA and the Alkali Fast Greens, which latter are so very fast to alkalies, are extensively employed in combination with Acid Violet for the dyeing of navy blues on ladies' dress material.

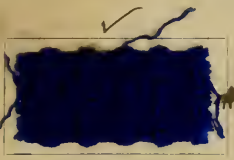
25 1% Alizarine Blue A S

26 2% Alizarine Blue SAE

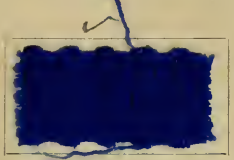


27 2% Alizarine Blue SAP

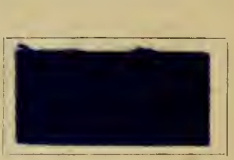
Alizarine Blue AS and the Alizarine Blue SAE & SAP are extraordinarily fast to light, their fastness to washing being also good. They are chiefly employed in combinations for the dyeing of light fancy shades on ladies' dress material and gentlemen's suits which have to be very fast to light.



28 2% Brilliant Wool Blue B extra



29 1% Brilliant Wool Blue G extra

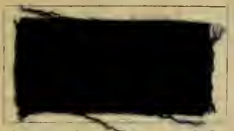


30 2% Wool Blue N extra

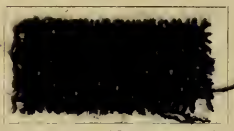
31 2% Wool Fast Blue B L

32 3% Anthra Cyanine 3 F L

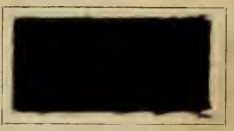
33 3% Anthra Cyanine F L



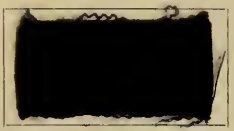
34 3% Anthra Cyanine D L



35 3% Victoria Navy Blue B



36 4% Victoria Navy Blue D K



37 1.5% Cashmere Blue T G extra

The Brilliant Wool Blues produce very clear shades possessed of very good fastness to washing. Wool Blue N extra is not quite so clear in shade as the Brilliant Wool Blues, but is also of good fastness to washing.

Wool Fast Blue B L is chiefly employed in conjunction with greens for the dyeing of navy blues which are very fast to light and washing.

The Anthra Cyanines are employed for the dyeing of a large range of navy blues fast to light; they also dye very easily level.

Victoria Navy Blue B and DK also dye very easily level, and on account of their low price are much in use for the dyeing of navy blues on ladies' dress material. The DK brand is extremely fast to steaming. (Decatting.)

Cashmere Blue TG extra is a very productive colour and in dark shades is very fast to light; it is employed in conjunction with Acid Violets and Victoria Violets for the dyeing of cheap navy blues.

38 
2% Fast Acid Violet 10 B

39 
2% Acid Violet 4 B extra

40 
2% Victoria Violet 4 B S

41 
2% Azo Acid Violet A L

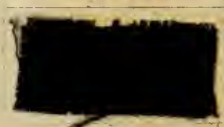
Fast Acid Violet 10 B has the property of dyeing extremely easily level and is therefore mostly employed for the dyeing of fancy combination shades. Azo Violet 4 B extra, Victoria Violet 4 BS and the Azo Acid Violet A L, which is possessed of such good fastness to light, dye easily level; they are generally employed in combinations for the dyeing of navy and dark blues.

42 
5% Chashmere Black 3 BX

43 
6% Chashmere Black T X

44 
4% Napthylamine Black S

45 
4% Napthylamine Black 4 BK

46 
6% Sulphon Cyanine Black B

The Chashmere Blacks are specially employed for the dyeing of thin ladies' dress material, the Naphtylamine Blacks being employed for thicker qualities of ladies' dress material and gentlemen's suits.

Naphtylamine Blacks are chiefly dyed with the addition of acetic acid, and the bath exhausted by adding a little more acid towards the end of the dyeing process.

Sulphon Cyanine Black B is a very popular colour for the dyeing of garments, as when dyeing with the addition of Glauber's salt and acetic acid the cotton seams are not stripped, but absorb even a little of the wool colour (directions for dyeing see page 12).

47 1% Rhodamine B

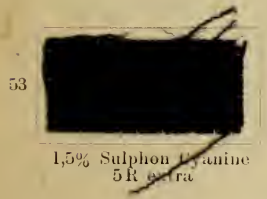
48 2% Alkali Violet L R

49 2% Acid Anthracene Red G

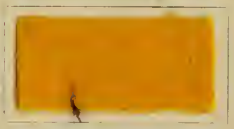
50 2% Acid Anthracene Red 3 B

51 2% Cloth Red 3G extra

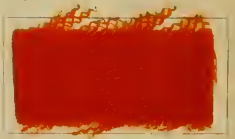
52 1,5% Sulphon Cyanine G R extra



53 1,5% Sulphon Cyanine 5 R extra



54 2% Chrysophenine G



55 2% Congo Orange R

56 3% Benzo Fast Red F C

Rhodamine B is dyed best with the addition of 2—3% acetic acid and 10% Glauber's salt without bringing the bath to the boil, as when boiled the clearness of the shade is flattened somewhat. It is used for the dyeing of pale pinks and in combination with Chinoline Yellow for salmon shades.

Alkali Violet is dyed at the boil with about 3—5 % sulphuric acid and Glauber's salt.

Sulphon Cyanines, which are generally employed on account of their very good fastness to light, washing and wearing, are dyed as a rule with 3—5 % acetate of ammonia and if necessary 5—10 % Glauber's salt crystals; if the bath does not exhaust add a little acetic acid.

All the other colours are generally dyed with 10—20 % Glauber's salt crystals and 2—5 % acetic acid.

Acid Anthracene Red G and 3B and Cloth Red 3G extra are possessed of good fastness to washing.

Chrysophenine G and Congo Orange R are employed as shading colours for shades fast to washing.

Benzo Fast Red FC produces bordeaux shades very fast to washing and light.

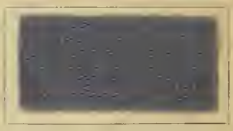
57

0,05% Alizarine Blue SAE
0,02% Fast Light Yellow G
0.03% Azo Fuchsine G

58

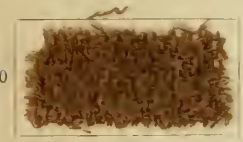
0.8% Alizarine Blue AS
0,3% Fast Light Orange G

59



0,1% Alizarine Blue SAE
0.04% Azo Fuchsine G

60



0.15% Anthra Cyanine 3FL
0.13% Azo Crimson S
0,2% Fast Light Yellow 2G

61

3% Fast Red A
0.7% Orange RO
0.2% Fast Acid Violet 10B

62

2% Fast Green blue shade
1% Tartrazine
1% Fast Acid Violet 10B

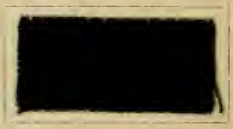
63

1% Cashmere Blue TG extra
1,25% Fast Acid Violet 10B

64

3% Azo Crimson S
1.5% Orange RO
1% Anthra Cyanine 3FL

65



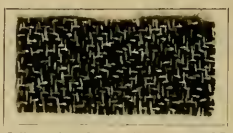
2,5% Fast Light Green
0,8% Orange II B
0.8% Tartrazine

These shades illustrate the most popular combinations of colours that dye easily level and which are extremely well adapted in some cases for the dyeing of gentlemen's suits, but more especially for ladies' dress material.

The Dyeing of acid colours which leave cotton checking threads white.

66 

0,2% Alizarine Blue S A E
0,06% Fast Light Orange G
0.01% Azo Crimson S

67 

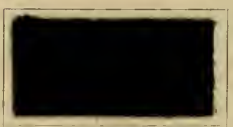
0,5% Anthra Cyanine F L
0,3% Orange II B

68 

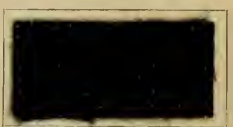
0,7% Alizarine Blue A S
0,25% Fast Light Orange G
0,06% Azo Phloxine 2 G

69 

3% Anthra Cyanine D L
2% Anthra Cyanine F L

70 

1,2% Alizarine Blue S A E
1% Tartrazine
0,7% Azo Crimson S

71 

5% Acid Chrome Black T C
1% bichrome

72 

4% Cashmere Black 3 B N

73 

4% Naphtylamine Black 4 B K

The colours illustrated above are especially well suited for the dyeing of woollen goods with white cotton checking threads.

Combinations of Alizarine Blue S A E, Alizarine Blue A S, Fast Light Yellow, Fast Light Orange G and Azo Crimson S are very often employed for the dyeing of gentlemen's suits, and in addition to the above colours, Acid Chrome Black T C (fast to perspiration) and Naphtylamine Black 4 B K are also well adapted for this particular class of goods.

The Dyeing of mordant colours according to the 1 or 2 bath method.

One bath method: enter the goods at about 120° Faht. into the dye bath containing the addition of 10—20% Glauber's salt crystals and 2—4% acetic acid, bring slowly to the boil, boil for ½ hour and then

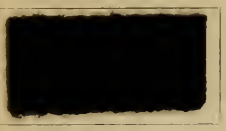
add some more acetic or sulphuric acid in order to exhaust the bath. Afterwards allow the bath to cool down or merely turn off steam, and after-treat for 30—40 minutes with the quantity of bichrome stated.

Two bath method: mordant the goods in the ordinary manner with bichrome and tartar or some other mordant, then rinse and dye with the addition of acetic acid.

The two bath method of dyeing mordant colours is only employed for better qualities of gentlemen's suits and uniforms.

All the colours without exception are possessed of good fastness to washing, perspiration and light; the Alizarine Green, Alizarine Blue SKY and Alizarine Blue BR3G being extremely fast to light. Acid Anthracene Brown R and T are very well suited for the

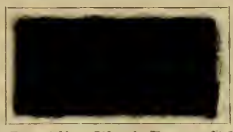
one bath method and the shades are extremely fast. The Alizarine W and PS, Anthracene Yellow C, Chrome Yellow DF and R extra are chiefly used for shading purposes If dyed with the usual precaution the level dyeing property of these colours can be considered good.

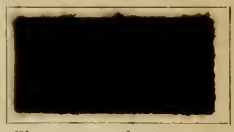
86 
1% Alizarine Black B
0,5% bichrome

87 
1% Chrome Cyanine T
0,5% bichrome

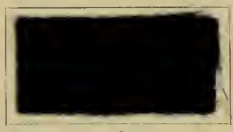
88 
6% Aliz. Black-Bayer G A
1% bichrome

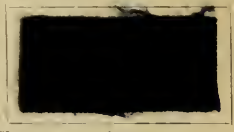
89 
8% Aliz. Black-Bayer P V
2,5% bichrome

90 
7% Aliz. Black-Bayer P2B
2% bichrome

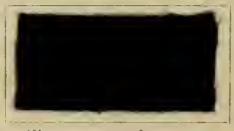
91 
Chrome mordant
3% Anthracene Brown W

92 
Chrome mordant
2,5% Chrome Cyanine R

93 
Chrome mordant
2,5% Chrome Cyanine G

94 
Chrome mordant
2% Brilliant Alizarine Blue R

95 
Chrome mordant
2% Alizarine Blue H X

96 
Chrome mordant
8% Alizarine Blue W B paste

Alizarine Black B dyes easily level and is possessed of excellent properties; it is employed in self shades for the dyeing of fast grays, more especially, however, as a combination colour.

Aliz. Black-Bayer GA, PV and P2B dye easily level and are very well adapted for the re-dyeing of gentlemen's suits. Aliz. Black-Bayer P2B can be dyed in combination with logwood on a chrome mordant, whereby considerably faster shades are obtained than when working with logwood alone. The Chrome Cyanine G, R and T are adapted for dyeing on a chrome mordant as well as after-chromed; they produce very fast shades.

The Alizarine Blue IIX and WB as well as Brilliant Alizarine Blue R and Anthracene Brown W are used for the dyeing of gentlemen's suits and uniforms which have to be very fast to light.

97

0.5% Alizarine Black B
0.4% Acid Anthracene Brown R
0.2% Anthracene Yellow C
0,6% bichrome

98

1% Chrome Cyanine T
1,5% Acid Anthracene Brown R
1% Chrome Yellow R extra
1,75% bichrome

99

0.25% Alizarine Black B
0,01% Acid Anthracene Brown R
0,01% Chrome Yellow R extra
0,2% bichrome

100

0,5% Alizarine Black B
0,2% Alizarine Green C E
0,4% bichrome

101

3% Alizarine Green C E
1,5% Alizarine Black B
2.25% bichrome

The patterns above illustrate some of the most popular combinations, which, as regards fastness to wear and light, can be considered excellent; they are chiefly to be recommended for the dyeing of heavier qualities of gentlemen's suits.

Remarks on the Dyeing of faded goods.

The Acid colours are the best as regards level dyeing for the dyeing of faded patches in garments. We herewith append a list of colours which dye faded and unfaded raw woollen cloth uniformly:

Anthracene Red	Carmoisine	Fast Acid Violet 10B
Azo Fuchsine G	Orange II B	Acid Violet 4 B extra
Azo Crimson S	Congo Orange G	Alizarine Blue A
Alizarine W	Fast Light Yellow G	Alizarine Blue SAP
Croceine Scarlet 3 BX	Tartrazine	New Patent Blue G A
Ponceau 1R	Chrysophenine G	Brilliant Acid Green 6B

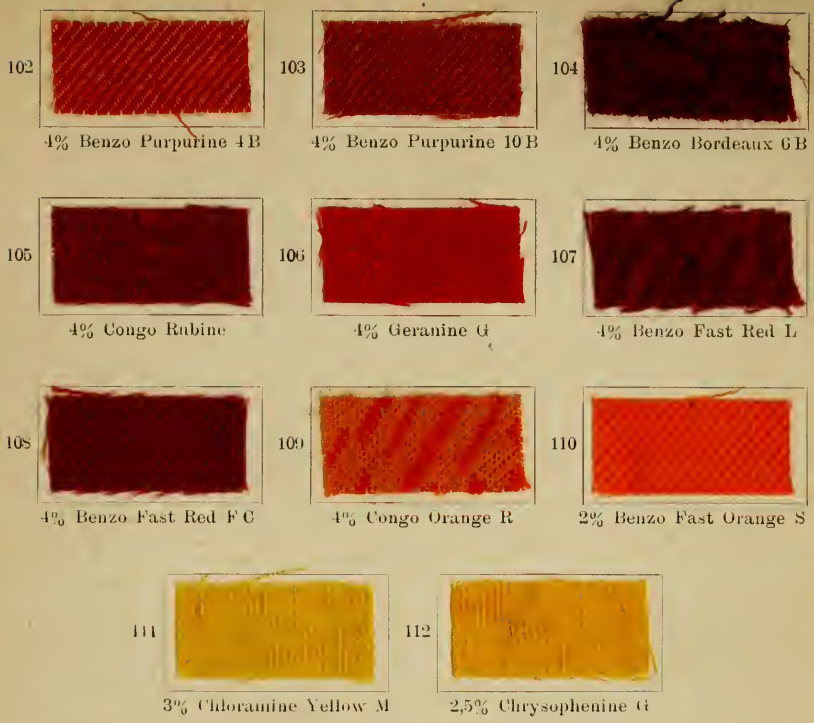
In the dyeing of coloured garments the results obtained depend of course upon the colours and method of dyeing originally resorted to. Faded patches in goods originally dyed with Acid colours are re-dyed more easily level than goods dyed with Alizarine colours.

II. The Dyeing of Half-Wool.

The dyeing of Benzidine colours which dye wool and cotton a uniform or almost a uniform shade.

Dye generally with the addition of 20—30 % Glauber's salt crystals. It can be taken as a rule, that when dyeing at the boil the wool is dyed a fuller shade, whereas at a lower temperature (160—180° Faht.) the cotton is dyed a deeper shade; consequently in order to produce a uniform shade care has to be taken that the temperature of the bath is properly regulated.

The Benzidine colours are extremely well adapted for the re-dyeing of half-woollen dress material, curtains, table-covers, etc.; they are also employed for the dyeing of ladies' all wool dresses and gentlemen's woollen suits, as the cotton seams are dyed the same shade as the cloth itself.



Benzo Purpurine 4B, 10 B, Benzo Bordeaux 6B and Congo Rubine can be employed for the dyeing of cheap claret shades, whereas Geranine G is very well adapted for pink shades.

Benzo Fast Red FC and L are remarkable for their good fastness to light, the former mentioned brand being also very fast to washing.

Congo Orange R, Benzo Fast Orange S and Chloramine Yellow M dye easily level; they are chiefly employed for the shading of fancy shades and browns.

Chrysophenine G is distinguished for its good fastness to light, acids and alkalies.

116 
3% Benzo Green C

117 
2% Brilliant Benzo Blue 6B

118 
2% Benzo Sky Blue

119 
4% Benzo Blue R W

120 
3% Blue 20641

121 
4% Navy Blue for Half-Wool 23445

122 
4% Navy Blue for Half-Wool 23446

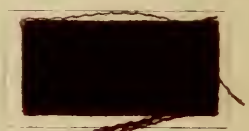
Benzo Dark Green B, GG, Benzo Green BB and C can be employed for the dyeing of dark greens (Russian green); Benzo Green BB is rendered faster to washing by an after-treatment with fluoride of chrome.

Brilliant Benzo Blue 6B and Brilliant Sky Blue are chiefly employed for the dyeing of pale brigt blues.

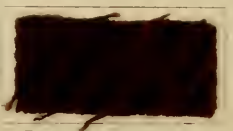
Benzo Blue RW, Blue 20641, Navy Blue for Half-wool 23445 and 23446 are used for a whole range of Navy blues; a darker blue, if necessary, can be obtained by admixing Pluto Black BS extra, Direct Deep Black E extra, etc.

123 
4% Benzo Chrome Brown 5G

124 
4% Benzo Chrome Brown G

125 
4% Benzo Brown MC

126 
4% Benzo Chrome Brown R

127 
4% Benzo Chrome Brown B

128 
4% Pluto Brown R

129 

4% Benzo Dark Brown extra

130 

4% Brown for Half-Wool 23315

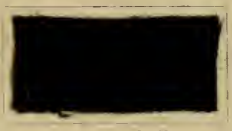
All the browns illustrated above are very well suited for the re-dyeing of different kinds of goods.

Benzo Chrome Brown B, G and R produce shades fast to washing, the G brand being in addition especially fast to light. The 5 G brand is somewhat inferior in fastness to washing. Benzo Brown MC is distinguished for its good fastness to washing, and for a direct dyed brown is remarkably fast to light.

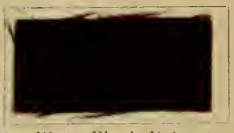
Brown for half-wool 23315 is chiefly used for the dyeing of cheap full dark browns.

131 

1% Pluto Black F extra

132 

4% Pluto Black F extra

133 

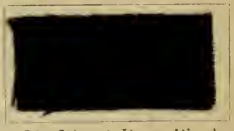
4% Pluto Black B S extra

134 

3% Direct Deep Black E extra

135 

3% Direct Deep Black EW extra

136 

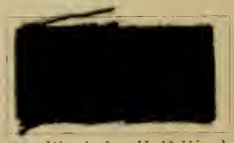
3% Direct Deep Black RW extra

137 

5% Black for Half-Wool L S

138 

4% Black for Half-Wool B G S

139 

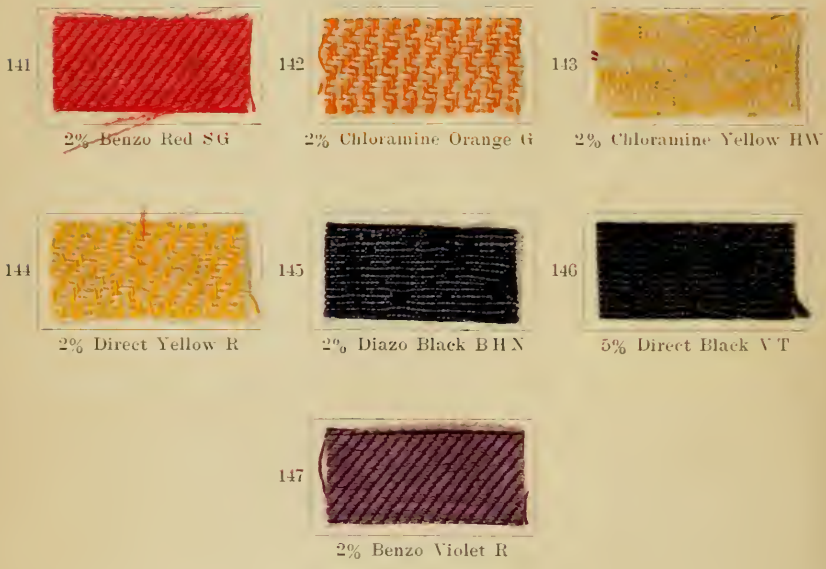
4% Black for Half-Wool 23316

140 

4% Black for Half-Wool 23296

As can be seen from the attached patterns a whole range of blacks of a bluish, greenish and reddish tone to deep black shades can be obtained with the colours illustrated above. The Direct Deep Blacks and Blacks for Half-wool are possessed of comparatively good fastness to light. Pluto Black BS extra dyes the cotton an intense shade in a luke-warm bath, the wool being only slightly covered; it is therefore also suited for the dyeing of cotton seams in woollen piece goods which have been originally dyed with Acid colours.

Benzidine colours which dye cotton a fuller shade than the Wool.



These colours can be employed for the shading of cotton, especially when dyed simultaneously with woollen colours on half-woollen goods in a neutral bath. For instance, a navy-blue can be dyed with Diazo Black BHN and Sulphon Cyanine GR extra, a pink with Benzo Red SG and Brilliant Croceine 3B or Rhodamine B, a black with Direct Black VT and Wool Black N4B.

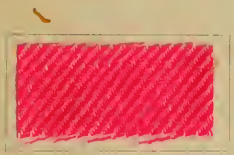
Acid colours which dye wool in a neutral bath

It will sometimes be found that the Benzidine Colours do not produce sufficiently bright shades, so that the shade on the wool has to be brightened, which is especially the case if the goods contain but little cotton and which is scarcely perceptible. This method of dyeing with Benzidine and wool colours together offers the dyer the best opportunity of dyeing uniform shades, especially if such Benzidine colours be selected which dye the cotton a fuller shade than the wool.

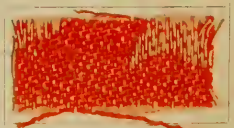
148 
2% Acid Anthracene Red 3B

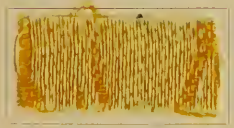
149 
2% Acid Anthracene Red G

150 
2% Brilliant Croceine 3B

151 
0,5% Rhodamine B

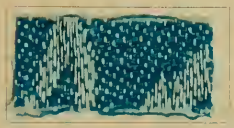
152 
2% Croceine Orange G

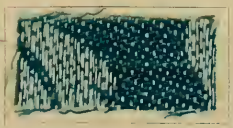
153 
2% Orange R O

154 
2% Indian Yellow G

155 
2% Sulphon Yellow R

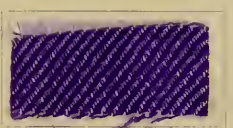
156 
2% Sulphon Yellow 5G

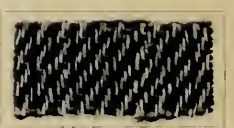
157 
2% Brilliant Acid Green 6B

158 
2% Fast Green C R

159 
2% Wool Blue N extra

160 
2% Wool Blue R extra

161 
1% Alkali Violet L R

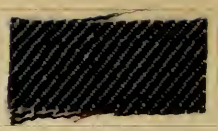
162 
1% Sulphon Cyanine G R extra

163 

1% Sulphon Cyanine 5 R extra

164 

3% Phenylamine Black 4 B

165 

3% Wool Black N 4 B

166 

2% Naphtylamine Black 6 B

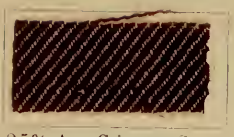
The Acid Anthracene Reds, Sulphon Yellows, Brilliant Acid Green 6 B and Fast Green CR produce shades very fast to washing; the same equally applies to Wool Blue N extra, R extra and Alkali Violet R L, the latter three colours being especially well adapted for the brightening of navy blues. The Sulphon Cyanines are especially employed for the dyeing of gentlemen's suits. The Blacks illustrated above can be employed in combination with Direct Black V T, etc. for the dyeing of ladies' dress material and gentlemen's suits. In addition to the blues illustrated above, Brilliant Wool Blue B extra, G extra, Wool Fast Blue B L and G L also dye the wool very well in a neutral bath.

The subsequent Dyeing of the cotton.

This is resorted to if the goods have been dyed with Acid colours (see the dyeing of wool) in which the cotton seams, linings, braiding, etc. have not been dyed. This method of dyeing is also employed for the dyeing of half-woollen goods in which there is but little cotton. In order to dye the cotton, such Benzidine colours are selected which dye the cotton well at a low temperature and only effect the wool but slightly.

This method consists of dyeing the wool first, then rinsing well and dyeing the cotton subsequently in a cold or luke-warm bath with Benzidine colours with the addition of 20 % Glauber' salt crystals. If it is necessary to dye the cotton exactly to shade, it is advantageous when dyeing the wool to keep it a little lighter than the required shade. By this means the Benzidine dye bath can be brought up to a somewhat higher temperature, whereby, as is well known, the Benzidine colours go more or less on to the wool.

167



2,5% Azo Crimson S
0,08% Alizarine Blue S A E

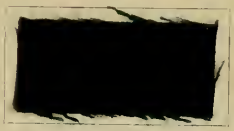
168

4% Benzo Red S G
0,1% Benzo Fast Blue B N

169

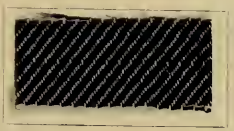
2% Fast Green blue shade
0,2% Tartrazine
0,1% Orange R O

170



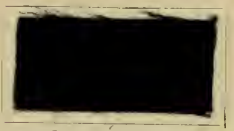
2,5% Benzo Sky Blue
1% Diazo Black B H N
3% Chloramine Yellow H W

171



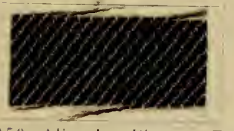
2,5% Victoria Navy Blue B

172



4% Diazo Black B H N
1% Brilliant Azurine B

173

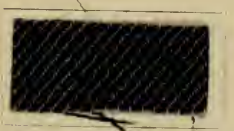


0,5% Alizarine Blue S A E
0,8% Tartrazine
0,7% Azo Crimson S

174

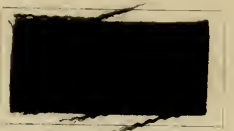
2% Benzo Brown M C
3% Chloramine Yellow H W
1,5% Benzo Fast Black

175



3% Naphtylamine Black S

176



7% Direct Black V T

On the preceding page we illustrate only dark shades on cotton, but would mention that of course any lighter tone in blues, pinks, fancies, etc. can be dyed.

III. The Dyeing of Silk.

General remarks.

On account of the value of silk goods the utmost care must be taken in dyeing. It is advisable before dyeing to test the strength of the silk goods by rubbing them, and if the silk is deteriorated in any way the quickest method of dyeing must be resorted to, and such colours must be chosen that dye very easily level.

Dyeing with Acid colours.

Although many of the Acid colours can be dyed direct with the addition of sulphuric acid, it is nevertheless advisable to dye in a boiled off soap bath, as it has the effect of causing the colour to dye more easily level and the silk is not so much affected. As in Garment Dye-works boiled off soap is seldom to be had, it is advisable to keep in stock a substitute for this by mixing up

1 lb. olive oil soap
2½ oz. gelatine
dissolved in 4 gallons water.

⅛—¼ of the dye bath should consist of this soap solution. Add slowly and under constant stirring 2—5 % sulphuric acid. Bring the bath up to a luke-warm temperature, work the goods in this bath several times, lift them, add the well dissolved dyestuff, stir up the bath and then commence dyeing. Warm up the bath slowly to about 190° Faht., work for 1 hour, rinse in cold water and scroop with acetic or sulphuric acid.

Dyeing with slightly acid dyeing colours.

In addition to boiled off soap add to the dye bath 2–5 % acetic acid, dye as above stated, and scroop with acetic or tartaric acid. The shades are rendered faster to washing if after-treated with tannins, such as, tannic acid, gall nuts or sumac. The same effect, however, can be obtained by after-treating with acetate of alumina 3–6° Tw. (or acetate of chrome), but the silk is then slightly softer.

Dyeing with Basic colours.

Basic colours are generally dissolved in distilled water; colours that are dissolved with difficulty should be stirred up with the same amount of pure glycerine as colour taken and four times as much alcohol or a little acetic acid; warm up on the water bath and finally add some hot water. Add to the dye bath 10 % olive oil soap or boiled off soap and 1—2 % acetic acid, add the requisite quantity of colour, enter the goods at about 85° Faht. and bring slowly to 120—160° Faht. After dyeing, rinse well and scroop with acetic acid, tartaric acid or some other scrooping agent. (Sulphuric acid should not be employed as it affects the shade of many Basic colours considerably).

Dyeing with Benzidine colours direct or diazotised and developed.

Dye in a boiled off soap bath broken with 2—5 % acetic acid. In order to prevent the colours exhausting too quickly, add the acetic acid in several portions. For dark shades take as much as 10 % acetic acid. Commence dyeing and dye at the temperature stated above.

Diazotise and develop in exactly the same manner as stated for cotton.

Dyeing with mordant colours.

Mordanting:

1. Allow the silk to lie in a bath of chloride of chrome 32° Tw. for 2—12 hours or over-night, then wring out and rinse best in running water.

2. Treat the silk in a bath of sulphate of alumina broken with soda; for 1 gallon water add 18 oz. sulphate of alumina free from iron and 3½ oz. soda crystals dissolved in 1¾ pints of water. This clear solution should be about 12—15° Tw. Work in this bath for 20 minutes and alow to lie in same for 4—12 hours, squeese out, rinse well and treat in a rather fatty boiling soap bath., squeeze out and rinse again.

3. Allow the silk to lie for at least 2—4 hours or over-night in a solution of ferric nitrate 32° Tw., squeeze out and rinse thoroughly, then enter the silk into clear warm water at 120° Faht. and finally treat for one hour in a boiling soap bath and rinse again. As the mordanting baths become weaker in use, care must be taken that they are brought up to their original strength each time before mordanting.

Dyeing.

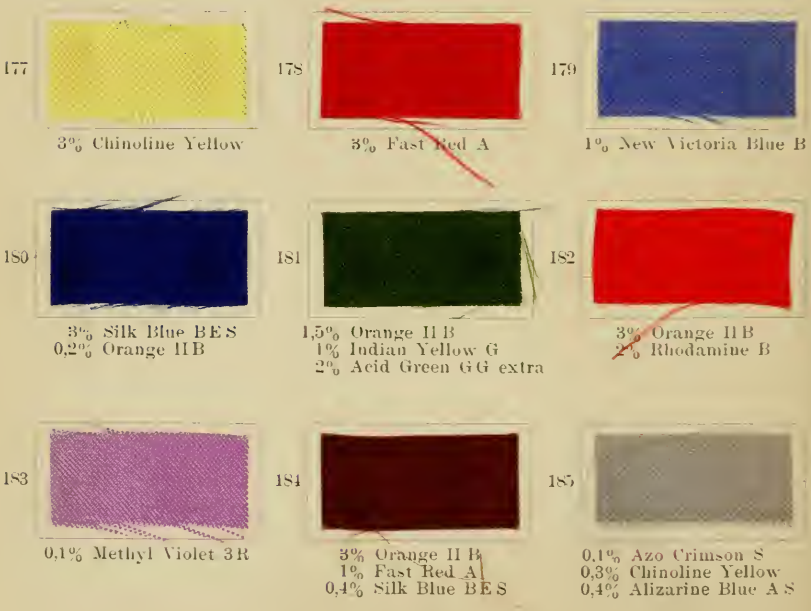
Dye the goods immediately they are mordanted without previously drying.

Prepare the bath with about 4 gallons boiled off soap liquor per 20 gallons water and 1% acetic acid of the weight of the goods, add the well dissolved dyestuff to the bath through a fine hair sieve, work for ¼ hour at 85° Faht., warm up in ¾ hour to 190–200° Faht. and work at this temperature for about an hour. Afterwards rinse, treat in two boiling soap baths containing 1 oz soap per 6¼ gallons water, rinse for several times and then scroop in a warm bath containing 10% acetic acid, squeeze out and dry.

Dyeing with Sulphon colours.

Dye for 1 hour at 190° Faht. in a boiled off soap bath and according to the depth of shade with 2–5 % acetic acid

Jet blacks on silk are dyed best with the addition of 10 % acetic acid, enter the goods luke-warm and bring the temperature of the bath up to 190° Faht. and work for 1 hour. After dyeing scroop with 5–10° acetic acid.



186

4% Silk Blue BES
0,6% Orange II B
0,1% Indian Yellow G

187

0,25% Nigrosine B

188

0,2% Brilliant Wool Blue G extra

189

0,1% Rhodamine B

190

4% Fast Red A
0,4% Acid Violet 4 B extra

191

8% Naphtylamine Black 4 B

The patterns illustrated above are some of the most popular shades for silk dyeing (see dyeing with slightly acid colours).

IV. The Dyeing of Half-silk.

Dyeing with Benzidine colours which dye cotton and silk a uniform or almost a uniform shade.

The light shades are dyed at 195—205° Faht. with the addition of 10 % soap, ¼ – ½ % soda ash and 10 % Glauber's salt, the dark shades with 10 % soap and ½ – 1 % soda ash and 30 % Glauber's salt crystals.

192 
3% Pluto Orange G

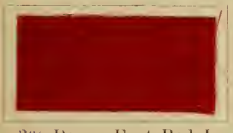
193 
3% Congo Orange R

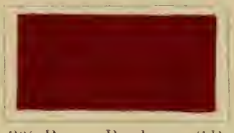
194 
0,5% Brilliant Geranine 3B

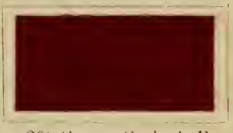
195 
2% Brilliant Geranine B

196 
0,3% Geranine G

197 
3% Benzo Fast Red F C

198 
3% Benzo Fast Red L

199 
3% Benzo Bordeaux 6 B

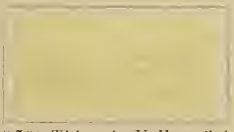
200 
3% Congo Corinth B

201 
3% Congo Corinth G

Pluto Orange G is a valuable colour for the dyeing of clear golden yellows, or, as it dyes easily level, as a shading colour for fancy and tan shades. Congo Orange R is chiefly employed in combinations. The Brilliant Geranines and Geranine G are used for bright pink shades fast to light. A whole range of Bordeaux shades can be obtained with Benzo Fast Red F C and L, Benzo Bordeaux 6 G, Congo Corinth B & G, either in self shades or in combination with one another.

The fastness to light of Brilliant Geranine and Benzo Fast Red F C & L is remarkable.

202 
3% Chrysophenine G

203 
0,5% Thiazole Yellow 3G

204 
0,5% Brilliant Benzo Green B

Chrysophenine G is one of the most extensively employed yellow colours, and is remarkable for its productiveness, clear shade and good fastness to light.

Thiazole Yellow 3G is not very fast to light, but on account of its very clear shade is employed in combinations for pale greens.

Brilliant Benzo Green B is used for bright greens fast to light, Benzo Green C for dark greens.

Benzo Blue R W is employed for clear medium blues, Chloramine Violet R for light, and Benzo Violet R L extra (on account of its great productiveness) for dark heliotrope and violet shades.

Pluto Brown R and Benzo Brown M C are the most extensively employed colours for dark browns, Benzo Brown D 3 G extra being chiefly employed for light tan shades or as a shading colour for fancy shades.

Benzo Chrome Brown B is very well adapted for fancy browns. Pluto Black TG extra produces a full bluish black; Diazo Black 2B, Diazo Fast Black SD and Direct Deep Black RW extra (diazotised and developed) produce deep blacks fast to washing.

The dyeing of Benzidine colours which are best adapted for leaving the silk white or almost white.

Light shades are dyed with the addition of 10 % soap and 1 % soda ash, dark shades with 20 % soap and 2 % soda ash at about 140° Falht. This method of dyeing is often employed in cases where the silk has to be subsequently dyed with Acid or Basic colours, such as, for instance, in producing two coloured effects.

3% Direct Yellow R

1% Chloramine Yellow G G

1% Chloramine Orange G

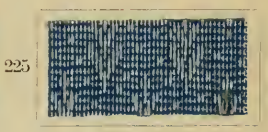
2% Benzo Fast Scarlet G S

2% Benzo Fast Scarlet 5 B S

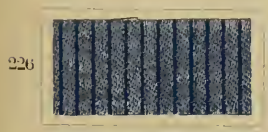
2% Benzo Fast Scarlet 8 B S

0,5% Benzo Fast Pink 2 B L

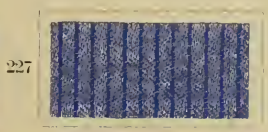
0,25% Brilliant Benzo Blue 6 B



2% Benzo Sky Blue



2% Benzo Chrome Black Blue B



2% Brilliant Azurine B

4% Diazo Black BHN

229 

2% Pluto Black G

230 

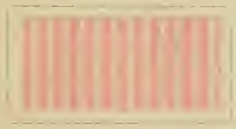
6% Diazo Black BHN
1% Direct Yellow R
1% Dev. H

Direct Yellow R is a useful colour for the dyeing of golden yellows, Chloramine Yellow GG for greenish yellows; both products are also employed in combinations. Chloramine Orange G dyed in pale shades produces flesh-coloured shades. The Benzo Fast Scarlets are not only employed for the dyeing of bright scarlet shades but also for strawberry reds; they are also employed as combination colours.

Benzo Fast Pink 2BL is used for the dyeing of bluish pink shades. Brilliant Benzo Blue 6B and Benzo Sky Blue are employed for greenish blues, Brilliant Azurine B more for reddish blues. Benzo Chrome Black Blue B is very well adapted for the dyeing of slate colours, Diazo Black BHN for dark blues. Pluto Black G is mostly employed for greys. Diazo Black BHN with Direct Yellow R (developed with Developer H) produces a black possessed of very good properties.

The dyeing with Acid colours which dye only silk.

Dye the silk at the boil in a concentrated acetic acid bath. This method of dyeing the silk alone, leaving the cotton white, is almost exclusively used for the producton of two coloured effects; the cotton is subsequently dyed with suitable Benzidine colours.

231 

0,05% Azo Crimson S

232 

0,2% Azo Fuchsine G

233 

1% Brilliant Croceine 3B

234 

0,1% Fast Light Yellow G

235 

0,5% Indian Yellow G

236 

0,1% Brilliant Acid Green 6B

The Dyeing of Half-silk.

237 

0,05% Brilliant Wool Blue G extra

238 

0,2% Alizarine Blue A S

239 

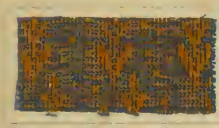
0,1% Acid Violet 4 B extra

240 

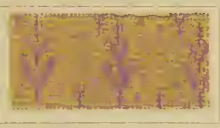
0,4% Fast Acid Violet 10 B

Azo Crimson S, Azo Fuchsine G, Fast Light Yellow G and Alizarine Blue A S are particularly fast to light; by suitable combinations with one another a whole range of fancy shades can be obtained.

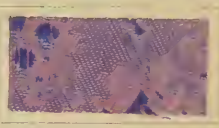
The dyeing of two colour effects.

241 

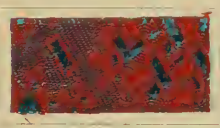
0,5% Orange II B
2% Benzo Sky Blue

242 

0,6% Direct Yellow R
0,2% Alkali Violet L R

243 

0,5% Benzo Fast Pink 2 B L
0,1% Brilliant Wool Blue G extra

244 

2% Benzo Fast Scarlet 5 B S
0,3% Brilliant Acid Green 6 B

As mentioned previously the most usual method consists of dyeing either the cotton or silk first with suitable colours and subsequently dyeing the white in a fresh bath. If the silk has been previously dyed with Acid colours and the cotton is to be dyed subsequently with Benzidine

colours, the latter method of dyeing should be carried out at as low a temperature as possible, with the addition of 10—20 % soap and 1—2 % soda ash. If the cotton has been dyed with Benzidine colours first, then the silk is dyed with Acid colours in a luke-warm bath containing acetic acid. Very fine two-coloured effects can be produced in one bath by employing Benzidine colours, which leave the silk almost undyed, in combination with wool colours which dye in a neutral bath, or Basic colours (see pattern 242).

V. The Dyeing of Silk-unions.

(wool and silk).

Dyeing with Acid or slightly Acid colours, which dye both fibres a uniform shade.

Acid Anthracene Red G and 3B are dyed with the addition of 2–3 % acetic acid and after dyeing for about ½ hour add 2—4 % acetic acid. The Gloria Blacks and Sulphon colours are dyed with the addition of 10—20 % Glauber's salt crystals at 190—205° Faht; it is also advantageous to add a little acetic acid subsequently. All the other colours are dyed at 190—205° Faht. with the addition of 5–10 % Glauber's salt crystals and 1—3 % sulphuric acid. It must be remembered that at a high temperature the colour goes more on to the wool, whereas at a low temperature more on to the silk. By regulating the temperature of the dye bath uniform shades can therefore be obtained.

3% Bordeaux extra

3% Fast Red A

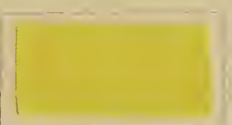
2% Brilliant Croceine 3B

3% Acid Anthracene Red G

3% Acid Anthracene Red 3B

3% Indian Yellow G

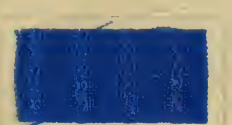
3% Fast Light Yellow G



2% Chinoline Yellow

2% Fast Green blue shade

2% Brilliant Acid Green 6B



0,5% Brilliant Wool Blue G extra

2% Wool Blue R extra

2% Fast Acid Violet 10B

10% Victoria Black B

10% Gloria Black B

10% Gloria Black N

1,5% Sulphon Cyanine G R extra

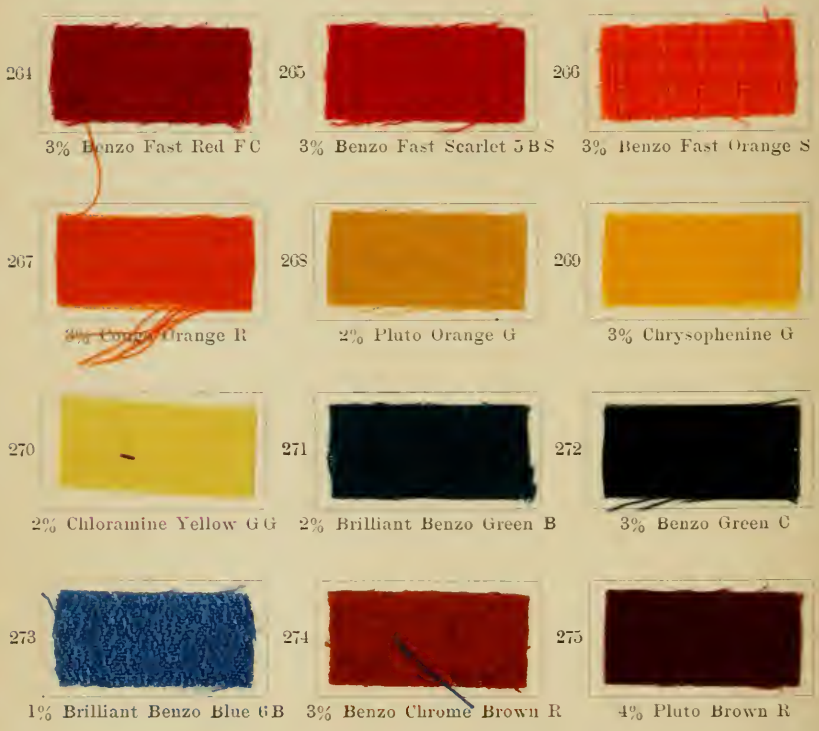
2% Sulphon Cyanine 5 R extra

10% Sulphon Cyanine Black 2276S

The colours illustrated above are the most popular for the dyeing of solid shades on silk-unions; their level dyeing property is good. Gloria Black and Sulphon Cyanine Blacks are very popular colours for the dyeing of deep blacks, the Sulphon Cyanines for dark navy-blues.

Dyeing of Benzidine colours which dye both fibres a uniform shade.

Dye with the additon of 10 – 20 % Glauber's salt crystals and 2 – 4 % acetic acid at 195 – 205° Faht. When dyeing at the boil the colour goes more on to the wool.

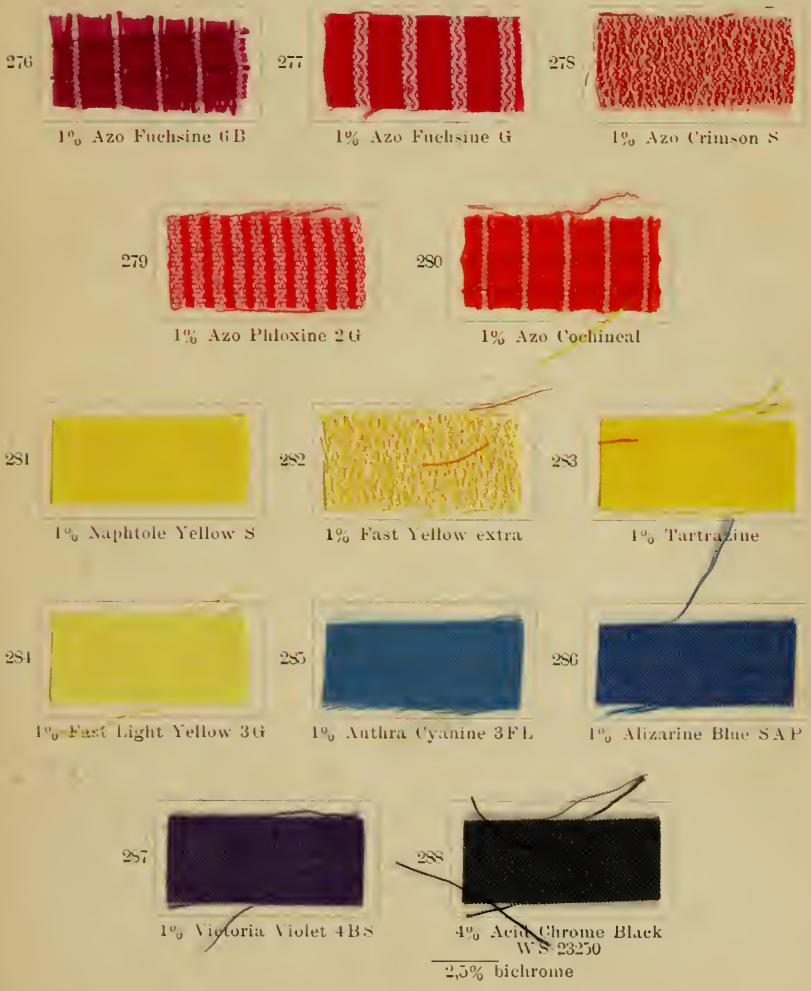


These colours can be dyed in combination with one another or in conjunction with wool colours that dye in a neutral bath. As the latter can be employed for shading purposes, perfectly uniform shades can be obtained.

Dyeing with Acid colours which leave silk white.

Dye at the boil in as long a liquor as possible with the addition of 10–20 % acetic acid according to the depth of shade required.

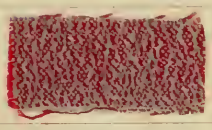
Acid Chrome Black WS 23250 is after-treated for ¾ hour at the boil in a fresh bath containing 2½—3 % bichrome and 3–5 % acetic acid.



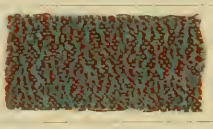
Any desired grey, fancy or brown shade can be obtained by combining Alizarine Blue SAP, Azo Fuchsine and Fast Light Yellow 3G or other Red and Yellow colours.

The method is not only serviceable for the dyeing of goods in which the silk has to remain white, but can also be resorted to for the production of two coloured effects.

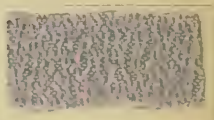
Dyeing of two coloured effects.

289 

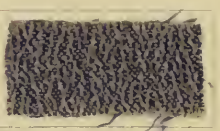
1% Azo Fuchsine G
1% Auramine II
0,05% Brilliant Green cryst.

290 

0,5% Azo Crimson S
1% Tartrazine
0.3% Turquoise Blue G

291 

0.1% Alizarine Blue SAP
0.1% Fast Light Yellow 3G
0.03% Rhodamine B

292 

0,75% Anthra Cyanine 3FL
0.2% Victoria Violet 4BS
0.2% Chrysoidine G
0,05% Rhodamine G

The wool is dyed according to the method previously mentioned, the goods are then rinsed, and the silk dyed in a cold bath with Basic colours and the addition of 3–4% acetic acid.

Acid colours are not often employed for shading silk.

VI. The Dyeing of goods consisting of Wool, Silk and Cotton.

Plain shades.

The simplest method of dyeing, consists in employing Benzidine colours, if necessary in conjunction with wool colours which dye in a neutral bath.

Prepare the bath according to the depth of shade with the addition of 10—30 % Glauber's salt crystals, enter the goods at 120—140° Faht., after ¼ hour bring to the boil, boil for about 10 minutes and continue dyeing without any further admission of steam. It can be laid down as a rule, that cotton and silk are sufficiently dyed at a temperature of 160—180° Faht., whereas the wool is dyed best at the boil, thus by the proper regulation of the temperature of the dye bath, uniform shades are chiefly obtained.

293 

3% Congo Corinth G
0,25% Alkali Violet LR

294 

4% Benzo Fast Red FC

295 

3% Benzo Purpurine 4B

296 

0,4% Brilliant Geranine 3B
0.03% Rhodamine B

297 

3% Congo Orange G

298 

3% Chloramine Yellow HW
2% Sulphon Yellow R

299 

2% Chloramine Yellow M
0,3% Brilliant Benzo Blue 6B
0,2% Brilliant Wool Blue
G extra

300 

4% Benzo Green C

301 

3% Brilliant Benzo Blue 6B
1% Brilliant Wool Blue
G extra

302 

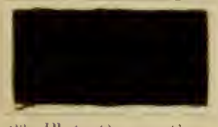
4% Diazo Black BHN
1% Sulphon Cyanine
GR extra

303 

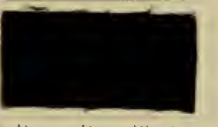
3% Benzo Violet RL extra
0,8% Acid Violet HW

304 

3% Benzo Brown MC
0,25% Sulphon Cyanine
GR extra

305 

2% Pluto Orange G
0.8% Pluto Brown R
0.8% Direct Deep Black
RW extra

306 

4% Direct Deep Black
RW extra
4% Sulphon Cyanine Black
2B

307 

4% Direct Deep Black
RW extra
3% Naphtylamine Black
4BK

The colours illustrated above can be combined with one another for the production of any desired shade.

VII. The Dyeing of Cotton.

The Dyeing of Benzidine colours.

Dye as a rule with the addition of 20 - 40 % Glauber's salt crystals and 1—2 % soda ash according to the depth of shade, enter the goods at the boil, turn off steam and allow the goods to dye in the cooling down bath. Other ingredients, such as, common salt, phosphate of soda, borax, etc, can also be employed.

Closely woven goods, which are difficult to penetrate, are dyed occasionally at the boil for 1/4 hour or even longer without any addition of salt, then add the salt and turn off steam.

In dyeing Benzo Chrome Black Blue B and Pluto Blacks it is advisable to add a little more soda.

Benzidine colours are extensively employed for the dyeing of cotton goods, as their method of dyeing is very simple and cheap. The fastness to light of certain Benzidine colours is improved when after-treated with copper sulphate, and an after-treatment with copper sulphate and bichrome also considerably improves their fastness to washing.

After-treatment with copper sulphate.

Rinse the dyed goods and treat for 10—15 minutes at 120—140° Faht. in a bath containing 1—3 % copper sulphate and a little acetic acid.

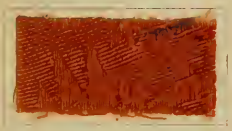
After-treatment with copper sulphate and bichrome.

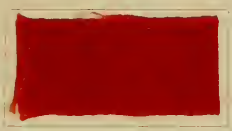
Prepare the bath with

2—3 % bichrome
2—3 % copper sulphate
2—4 % acetic acid (according to the hardness of the water)

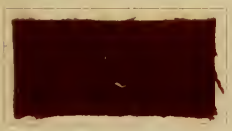
boil up and treat for 20—30 minutes, then rinse.

The properties of the principle colours have already been referred to under the dyeing of half wool, and further particulars will be found in our pattern books "Benzidine colours on cotton yarn, No. 1108, 1904 and No. 1164, 1905."


308 4% Benzo Purpurine 4 B


309 4% Benzo Fast Scarlet 5 BS


310 3% Benzo Fast Red F C


311 4% Congo Corinth B


312 4% Benzo Bordeaux G B

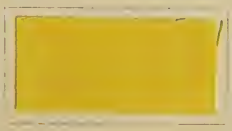

313 0,25% Benzo Rhoduline Red B


314 1% Benzo Rhoduline Red 3 B


315 0,2% Benzo Fast Pink 2 B L


316 2% Benzo Fast Orange S


317 3% Pluto Orange G


318 1% Chloramine Yellow M


319 3% Chrysophenine G

320 

4% Benzo Green C

321 

1% Brilliant Benzo Green B

322 

0.25% Brilliant Benzo Blue 6B

323 

1% Benzo Blue RW

324 

4% Benzo Fast Blue BN

325 

4% Benzo Azurine 3R

326 

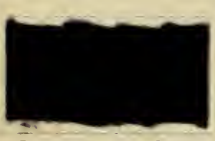
4% Diazo Black BHN

327 

3% Benzo Azurine G

328 

1% Brilliant Benzo Blue 6B
1% copper sulphate

329 

4% Benzo Chrome Black Blue B
3% bichrome. 3% copper sulphate. 4% acetic acid.

330 

3% Benzo Copper Blue B
3% bichrome. 3% copper sulphate. 4% acetic acid.

331 

0,15% Benzo Violet RL extra

332 

3% Benzo Brown D3G extra

333 

4% Benzo Brown RC

334 

3% Benzo Brown MC

335 

3% Pluto Brown B

336 

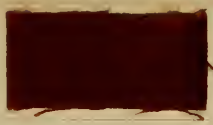
3% Benzo Dark Brown extra

337 

4% Benzo Chrome Brown B

338 

4% Benzo Chrome Brown 5 G
3% bichrome. 3% copper sulphate. 4% acetic acid.

339 

4% Benzo Chrome Brown G
3% bichrome. 3% copper sulphate. 4% acetic acid.

340 

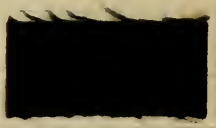
3% Benzo Chrome Brown C R
3% bichrome. 3% copper sulphate. 4% acetic acid.

341 

0,15% Benzo Fast Black

342 

0,3% Pluto Black S S extra

343 

4% Direct Deep Black R W extra

344 

4% Pluto Black C F extra

345 

0,1% Benzo Fast Pink 2 B L
0,08% Benzo Fast Orange S

346 

0,2% Chloramine Yellow M
0,06% Brilliant Benzo Green B

347 

2% Brilliant Benzo Blue G B
2% Benzo Azurine G

348 

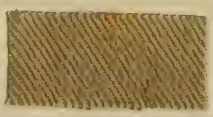
0,4% Chloramine Yellow M
0,08% Benzo Fast Orange S
0,15% Benzo Fast Black

349 

1,5% Chrysophenine R
0,4% Benzo Fast Orange S
0,8% Benzo Fast Black

350 

0,3% Chloramine Yellow M
0,05% Benzo Fast Orange S
0,8% Benzo Fast Black

351 

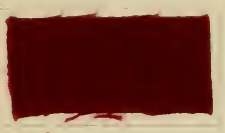
0,2% Chloramine Yellow M
0,03% Benzo Fast Orange S
0,08% Benzo Fast Black

The above patterns have been dyed with Benzidine colours, which are especially remarkable for their very good level dyeing property.

Dyeing with Diazo colours.

Diazo colours are chiefly to be employed for shades fast to washing; with direct dyeing Benzo colours the same fastness to washing cannot be obtained.

The Diazo Brilliant Scarlets are dyed best with the addition of about 2 % soda ash and, if necessary, 10 % Glauber's salt crystals, all the others in the same manner as Benzidine colours with the addition of Glauber's salt and soda. After dyeing, rinse well and diazotise in a cold bath for 20—30 minutes. Prepare the diazotising bath, according to the depth of shade required, with 1½—2½ % nitrite of soda, 5—7½ % hydrochloric acid 32° Tw. or 3—5 % sulphuric acid. After diazotising, rinse again well and develope for 20—30 minutes in a cold bath with the quantity of the respective developer mentioned in the recipe.

352 

4% Diazo Bordeaux 7B
1,5% Dev. A

353 

4% Primuline Yellow
1,5% Dev. A

354 

3% Diazo Brilliant Scarlet 6B extra
1,5% Dev. A.

355 

3% Diazo Brilliant Scarlet G extra
1,5% Dev. A

356 

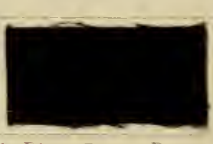
1% Diazo Indigo Blue BR extra
1% Dev. A.

357 

4% Diazo Navy Blue 3B
1,5% Dev. A.

358 

3% Diazo Indigo Blue 4RL
1,5% Dev. A.

359 

4% Diazo Brown R extra
1,5% Dev. H.

360 

8% Diazo Fast Black BHX
1,5% Dev. H.

361 

8% Diazo Fast Black B
1,5% Dev. A.

The Diazo Brilliant Scarlets have aroused considerable interest on account of their extremely bright shades and great productiveness, and are often employed as a substitute for Primuline and also sometimes for Turkey Reds. In addition to the Diazo Brilliant Scarlets illustrated in this book we can also recommend the B extra, the 2BL extra conc., and 3B extra, which produce a more bluish tone than the G extra. The 2BL extra conc. is especially remarkable for its great productiveness.

Diazo Bordeaux 7B is employed for the dyeing of bluish clarets and can be dyed in combination with Diazo Brilliant Scarlets.

The Diazo Indigo Blue BR extra and 4RL can be employed as substitutes for Indigo. Diazo Navy Blue 3B dyes, in self-shades, very dark blues, which in combination with Diazo Indigo Blue 4RL can be shaded to the red side. Diazo Brown R extra produces dark browns very fast to washing, the Diazo Fast Black B and BHX producing very fine blacks. (N. B. Developer H generally produces darker shades.)

The dyeing of Basic colours.

Mordant the material first with 2—5 % tannic acid or for very dark shades with 30—40 % sumach; work for a short time at 120—140° Faht. and allow the material to remain in the liquor several hours, or, better still, over-night. Then squeeze out and treat in a cold bath for 20—30 minutes with 1—3 % tartar emetic or antimony salt and rinse well.

If sumach has been employed it is better to use pyrolignite of iron or ferric nitrate instead of tartar emetic. In mordanting with tannic acid and during the dyeing process, the material should not come in contact with iron, which would cause black spots.

Dye as a rule with the addition of 1—2 % acetic acid or 5 % alum; enter the goods cold and bring the bath slowly to 100—120° Faht.

As the Basic colours are greedily absorbed by the cotton fibre, thus easily producing uneven shades, it is advisable to add the colour solution in several portions and to raise the temperature of the bath only slowly.

By a short after-treatment with tannic acid and tartar emetic in cold separate baths, e. g. 1/2 hour with 2 % tannic acid and 10 minutes with 3/4 % tartar emetic, the fastness to washing is considerably improved.

1% Rhodamine 5G 1% Brilliant Green cryst. 0,5% Diamond Fuchsine cryst.

0,4% Victoria Blue B | 0,5% Auramine II | 2% Methylene Green B

2% Chrysoidine G | 0,5% Methyl Violet B

Basic colours are generally employed for very bright shades, which connot be obtained with other colours.

The dyeing with Katigen colours.

This category of dyestuffs is possessed of extremely good properties and consequently they have in recent years been generally introduced for the dyeing of all classes of cotton goods; they are extensively employed for the dyeing of cotton cloths, linen, half-linen etc., for which class of goods best fastness to washing and good fastness to light are required. The method of dyeing is as follows.

Dissolving.

The single brands are dissolved in boiling water with the same amount, the extra brands with double the amount of sulphide of soda crystals as colour taken.

Preparing of the dyebath and dyeing.

According to the hardness of the water and the depth of shade required add to the bath 2—8 % soda ash and 10—60 % Glauber's salt crystals (5—30 % common salt). Boil up the bath with the requisite amount of soda and if necessary skim off. Then add the colour solution, boil up again well and add the Glauber's salt.

In dyeing linen, half-linen and other goods difficult to penetrate, the Glauber's salt should be added after boiling for about ¼ hour. In dyeing with Katigen Indigo brands, it is advantageous to add to the bath just as much syrup as colour taken. Dye as a rule for ¼ hour at the

boil or just under and then continue boiling for ¾ hour without steam. Squeeze out all superfluous liquor, then rinse well. A number of colours, especially Katigen Dark Blue R extra and the Katigen Indigo brands dye very well at 60—120° Faht. As the Katigen colours, dyed direct without any after-treatment with metallic salts, possess very good properties, it is only necessary to after-treat in special cases where particular fastness to light and boiling is required.

Katigen Chrome Blue and Katigen Chrome Brown have to be after-treated in order to develop the proper shade. In this case after-treat in a fresh bath with

2—3 % bichrome
2—3 % copper sulphate
2—5 % acetic acid,

and work the material in this bath for ½ hour at about 200° Faht. In dyeing khaki shades, which are in some cases required to be extremely fast to light, it is better to take less bichrome and more copper sulphate.

As regards further particulars on the dyeing of Katigen colours, we refer you to our special pattern books.

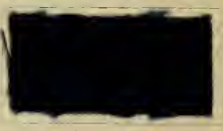
370 5% Katigen Yellow G

371 15% Katigen Olive G X

372 10% Katigen Green 2 G

373 4% Katigen Green 4 B

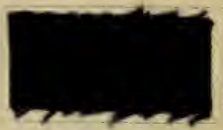
374 15% Katigen Green 2 B X



375 10% Katigen Chrome Blue 5 G after-chromed

376 7% Katigen Chrome Blue 2 R after-chromed

377 3% Katigen Indigo C L extra



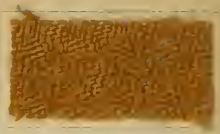
378 10% Katigen Indigo R L extra

379 

6% Katigen Red Brown R

380 

10% Katigen Yellow Brown G R extra

381 

3% Katigen Yellow Brown G G extra

382 

10% Katigen Black Brown R extra conc.

383 

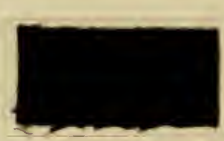
1% Katigen Black SW extra

384 

20% Katigen Blue Black 4B

385 

8% Katigen Dark Blue R extra

386 

12% Katigen Black T extra

387 

7% Katigen Khaki G extra
8% Katigen Green 2BX
1% Katigen Blue Black 4B

388 

6% Katigen Indigo R L extra
4% Katigen Blue Black 4B

389 

5% Katigen Violet B

390 

5% Katigen Red Brown R
2% Katigen Yellow Brown G R extra

391 

10% Katigen Khaki G extra
2% Katigen Yellow Brown G R extra

392 

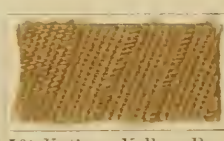
6% Katigen Black Brown R extra conc.
6% Katigen Khaki G extra
1% Katigen Black T extra

393 

1% Katigen Black Brown N extra conc.
0,8% Katigen Yellow Brown G G extra

394 

1% Katigen Khaki G extra
0,1% Katigen Red Brown R
after-chromed

395 

1,5% Katigen Yellow Brown G G extra
0,1% Katigen Black Brown N extra conc.
after-chromed

396 

2% Katigen Black S W extra
0,5% Katigen Yellow Brown G G extra

Katigen Yellow G is very clear and is chiefly employed in combinations. Katigen Olive is used for the production of mignonette and olive shades. Katigen Green 2G is remarkable amongst the other Katigen Greens for its extraordinary bright shade. Katigen Chrome Blue 5G and 2R have to be after-treated with metallic salts to produce their proper shade and fastness. The Katigen Indigo brands (which are almost exclusively employed in direct shades) are very useful substitutes for Indigo. With the various Katigen brown brands a whole series of fancy and brown shades can be obtained. The Katigen Blacks and Katigen Blue Blacks are not only employed for the dyeing of blues and deep blacks, but also for a complete series of greys, as, in addition to their comparatively easily level dyeing properties, their fastness to light in pale shades can be considered also good.

The Katigen colours can all be dyed in combination with one another.

(The quantities of colour stated in the recipes, and for the patterns, refer to the first bath, and in dyeing in a standing bath the quantity can in some cases be reduced up to 40 %).

Different kinds of Material.

VIII. The dyeing of artificial silk.

As artificial silk easily breaks when wet it can only be dyed at a low temperature and with great precaution

Chardonnet silk.

* Dyeing with Basic colours.

Wet out the goods at 60—100° Faht. and dye for ¾—1 hour at the same temperature with the addition of 3—6 % acetic acid. In order to ensure the colour dyeing level, it is advisable to add the well dissolved dyestuff in several portions.

Dyeing with Benzidine colours.

For light shades the material should be wetted out first. Dye for ½—1 hour, in as long a liquor as possible, with the addition of 5—15 % Glauber's salt crystals (2½—7½ % common salt) at 60—100° Faht.

For light fancy shades it is advisable to commence dyeing without any Glauber's salt and to add the salt after dyeing some time.

The dyeing of Katigen colours.

Dye according to instructions given for cotton, care being taken that the temperature of the bath does not exceed 80—100° Faht.

Glanzstoff.

The dyeing of Basic colours.

Light shades can be dyed according to the recipe given for Chardonnet silk, but medium and dark shades should be first mordanted with tannic acid and tartar emetic. Treat for 2—3 hours at 100° Faht.

* By mordanting Chardonnet silk (same as mentioned for Glanzstoff) considerably fuller shades are obtained, which in comparison to the unmordanted are faster to light and their fastness to washing and rubbing is considerably improved. This method should always be employed for the dyeing of very full shades.

in a bath containing 2–4 % tannic acid and ½ – 1 % hydrochloric acid, then lift, hydroextract and fix in a fresh, cold bath containing 1–2 % tartar emetic.

Dye with the addition of 3–6 % acetic acid, enter the goods at the ordinary temperature, add the colour in several portions and bring the bath finally up to 100–120 ° Faht.

The dyeing of Benzidine colours.

Dye in the same way as stated for Chardonnet silk. Benzidine colours can be topped with Basic colours in a fresh cold bath acidulated with acetic acid.

Katigen colours

are dyed in the same way as stated for Chardonnet silk.

IX. The dyeing of Hosiery.

Wool.

There are quite a number of colours illustrated in this book, which, as regards fastness to washing and low cost of dyeing, are extremely well adapted for hosiery. We refer you to the various chapters on wool dyeing and to the colours and their properties, and would remark that those shades dyed on a chrome mordant or after-chromed are the best as regards fastness to washing and perspiration.

Cotton.

If no particular requirements as regards fastness to washing are desired, the direct dyed Benzidine colours can be employed. If fastness to washing is an essential point, then we recommend the diazotising and developing colours, or those after-treated with metallic salts as well as the Katigen colours.

With regard to the direct dyed Benzidine colours, we would kindly draw you attention to it, that all the Pluto Blacks and the Direct Deep Blacks are rendered considerably faster to washing by an after-treatment with formaldehyd, so that in most cases they will suffice for hosiery goods, stockings, etc. After-treat in a fresh, cold bath for ½ hour, or for 15–20 minutes at about 120 ° Faht. with the addition of about 2 % formaldehyd.

X. The dyeing of Linen, Half-Linen & Ramie.

Boil up the linen first with 5–10 % soda and dye in a similar manner as cotton. As linen is often very difficult to penetrate, add, besides the requisite quantity of soda, 2 % soap, which has the effect of causing the Benzidine colours to fall on more slowly, thereby improving the penetration, and the common or Glauber's salt should not be added before boiling for ½ hour.

As regards the other methods of dyeing (also for ramie), we refer you to the dyeing of cotton. It can be taken as a rule that in dyeing pure linen and half-linen, considerably less colour is employed than is necessary to produce the same shade on cotton.

XI. The dyeing of Jute.

In order to clean the jute it should be boiled in water. For bright, clear shades it is necessary to bleach first. A simple bleaching method consists of allowing the jute to lie for several hours after boiling in water (or with 5 % soda) in a solution of chloride of lime 1 ° Tw., treat several times, then squeeze out, if necessary acidulate slightly and rinse well in running water.

Dyeing with Acid colours.

Calcareous water, say of about 5 ° hardness, should be corrected with 200 ccm. acetic acid 12 ° Tw per 1000 litres (½ pint per 300 gallons) water. Add to the bath 2 - 5 % alum, enter the goods at the boil, dye for ½ – ¾ hour, turn off steam and continue dyeing for another ½ hour.

The dyeing of Basic colours.

Basic colours dye jute without the aid of any mordant, but it is advantageous, especially in light shades or mixtures, to add to the bath 1–2 % acetic acid. Enter the goods lukewarm and bring the bath slowly to 160 – 180 ° Faht. In some particular cases, in order to produce more level shades, the colour is added in several portions. Very bright shades, especially for some reds, can be produced on raw jute if dyed with the addition of 1 – 2 % oxalic acid.

Dyeing of Benzidine colours.

Benzidine colours can be dyed according to different methods e. g.

Direct Deep Black E extra
Direct Deep Black EW extra
} Dye for ¼—½ hour at the boil with the addition of 10—20 % Glauber's salt cryst. and 1—2 % soda ash.

Benzo Purpurine 10 B is dyed for one hour with the addition of 10 % Glauber's salt crystals,

Congo Corinth is dyed for 1 hour just under the boil with 10 % common salt.

The baths do not exhaust, and therefore, when dyeing subsequent lots in the same bath, about ⅓ of the amount of colour taken for the first bath and ⅘ salt can be saved.

The dyeing of Katigen colours.

The particulars and recipes given for the dyeing of cotton hold good for Katigen colours, with the exception, that no soda should be employed and the dye bath should be kept at a low temperature.

XII. The dyeing of Coir Yarn.

Coir yarn is often cleaned in the same way as jute and is dyed in the same way with Basic, Acid and Benzidine colours. Acid colours penetrate, however, much better than Basic colours.

Dyeing with Katigen colours.

Dissolve the colour in the usual manner with boiling water and sulphide of soda and add the colour solution into the cold dye bath containing soft water. Dye either cold or at a temperature of 80—100° Faht., rinse well and acidulate with acetic acid. The goods can be after-treated in the same way as cotton, with bichrome and copper sulphate, or topped with Basic colours. Katigen colours on coir yarn are possessed of good fastness to light.

XIII. Dyeing of chip plait.

Previous treatment.

For light shades it is advisable to boil the chip and if necessary to bleach. The simplest bleaching process is to treat at 70° Faht., with sulphurous acid.

Dyeing of Basic colours.

Dye at the boil for 1—1½ hours with merely the addition of the colour itself.

Dyeing of Acid colours.

Dye at the boil with the addition of ½—2 % sulphuric acid, then rinse well until the chip is thoroughly free from acid.

Dyeing of Benzidine colours.

Dye at the boil for 1—1½ hours, according to the colour used and depth of shade required, with the addition of 5—20 % Glauber's salt crystals (2½—10 % common salt), in some cases with 2 % soda and 10—20 % Glauber's salt, then rinse. Benzidine colours are the best adapted for the dyeing of chip plait, as they penetrate the cross sections and are generally faster to light than Basic colours dyed without tannic acid.

XIV. Dyeing of straw.

Previous treatment and bleaching.

If the straw has to be dyed a black shade it is merely necessary to treat with soda ash. Italian or Tuscan straws are very dark, dirty and greasy, and therefore require to be boiled a long time with soda. After the straw has been boiled in the usual manner with 2% soda or potash and washed, it can be bleached in the stoving box (if required for very pale shades).

Königswarten and Ebell recommend the following bleaching process:

Dissolve 1 1/8 lbs. of oxalic acid in 10 gallons cold water as soft as possible, then add under constant stirring 1 lb. peroxide of soda. As the bath reacts acid, add just sufficient silicate of soda (about 1 1/2 lbs. 55—75° Tw.) to cause the liquor to become slightly alkaline. In order to produce a quicker bleaching, the liquor can be employed more concentrated, taking for the above percentages 5 instead of 10 gallons water.

Enter the straw at 60—80° Faht. and allow to lie in the bath until a satisfactory bleach is obtained; then rinse well in soft water and, if necessary, remove the yellowish tone of the straw by treating in a diluted acid solution or by allowing to hang in the open air for some time. If treated with acid, the straw must be washed again in cold water. The straw must always be dried cold, in order to prevent same becoming brittle.

Dyeing of Basic and Benzidine colours.

Enter the straw lukewarm, bring the bath to the boil in 1/2 hour boil for about 3 hours, rinse and dry.

XV. The dyeing of feathers.

Previous treatment.

Clean the feathers first in a bath at 70—80° Faht. containing a little soda and ammonia; treat until the feathers appear no longer greasy, and then wet out well in water. In many cases after being treated with soda, the feathers are drawn through cold water containing a little starch powder.

The feathers can be bleached with peroxide of hydrogen or peroxide of soda in the same way as wool.

Dyeing with Acid colours.

Dye for 1—2 hours just under the boil (or ½ hour at the boil) with the addition of 2—5 % sulphuric acid. After dyeing, dry if possible in a hydroextractor.

Basic colours are not so well adapted for the dyeing of feathers, but can be dyed at a temperature of 80—100° Faht.

XVI. The dyeing of Blacks on gloves.

Dissolve 10 grms. of Nigrosine 12231 soluble in oil in 160 ccm. chloroform.

Brush this solution on the gloves and a deep black immediately ensues, then dry. After rubbing the gloves over with a slight amount of guttaline, in order to remove the bronzy tone, dry with a clean rag.

Instead of chloroform, epichloride can be employed, but the leather dries more slowly on employing the latter.

(It is best to dye according to this process with a vent or outlet attached so as to avoid inhaling the injurious gases.)

Stripping agents.

Wool.

Many acid colours can be stripped more or less in a boiling bath containing Glauber's salt or Sulphuric acid and Glauber's salt.

Soda and ammonia are also employed for stripping purposes, but the bath should neither be too concentrated nor to hot, so as not to affect the wool at all if possible.

Bichrome and sulphuric acid are also occasionally employed for stripping goods dyed with mordant colours

Nitric acid is also a good stripping agent; take about 60 ccm. per liter water and treat the goods in this bath at the boil.

Recently very good results have been obtained with Rongalite C for the stripping of wool and half-woollen goods.

Prepare the bath with

4 % Rongalite C
4 % acetic acid or
1–2 % formic acid.

Enter the goods lukewarm, bring slowly to the boil and boil for ½ hour. As different colours are stripped more or less by this product, it is well to make a test first with a small cutting, in order to ascertain whether the process will suit or not.

Stripping with Decroline (patent applied for) Strip with

3–5 % Decroline and
3–5 % sulphuric acid

of the weight of the goods. Enter the goods, which have been previously cleaned, in the usual manner, either by washing in water or in a soda solution, lukewarm, bring up to the boil, and work for 15–30 minutes just under the boil. Instead of sulphuric acid, acetic or formic acid can be employed.

Care should be taken that the bath is acid all the time and stripping should be carried out in wooden vessels. Any steam pipes that are exposed should be wrapped up.

Cotton.

For stripping cotton goods use soda, ammonia and soap, or if the colours are very susceptible to chlorine it is best to take chloride of lime.

Silk.

Silk is generally stripped in a boiling soap bath.

— Without guarantee. —

Continental Color
& Chemical Co.
128 Duane St. New York.